

Abstract of the Disclosure

A method and apparatus for speech processing in a distributed speech recognition system having a front-end and a back-end. The speech processing steps in the front-end are as follows: extracting speech features from a speech signal and normalizing the speech features in order to alter the power of the noise component in the modulation spectrum in relation to the power of the signal component, especially with frequencies above 10Hz. A low-pass filter is then used to filter the normalized modulation spectrum in order to improve the signal-to-noise ratio (SNR) in the speech signal. The combination of feature vector normalization and low-pass filtering is effective in noise removal, especially in a low SNR environment.